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ABSTRACT

A study was undertaken for Cottonwood High School (CHS) to determine if an electronic security system (ESS) would reduce hardbound book theft sufficiently to justify the installation and maintenance costs of the system. A projection of future losses with and without the system was made to determine the advisability of installing a system. Other high school media centers throughout the Intermountain West employing such systems were sent surveys so a comparison could be made between CHS and other schools. Results of the survey revealed that school media centers had considerable reduction in book loss and costs after the system had been installed in their schools. Average decrease in book loss was 80 percent with a savings cost for a five year period amounting to \$386,745. Applying this percentage of decrease to previous average losses for the past five years at CHS and the average cost of the system, an ESS could prevent enough books from being stolen to pay for the system in approximately two years. Projections showed that without the system 3,715 more books would be stolen in a five year period at a cost of \$64,047. Appendices include a copy of the survey form, summary of collected data, and names and addresses of the high schools participating in the study. (Author/JPP)

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THE ECONOMICAL FEASIBILITY OF INSTALLING
A BOOK DETECTION SYSTEM AT
COTTONWOOD HIGH SCHOOL

by

DiAnna Davis

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ABSTRACT

This research was undertaken to determine if an electronic book detection system would reduce hardbound book theft sufficiently to justify the installation and maintenance costs of the system. The study was attempted in order that a way might be found to cut back on book theft in the Materials Center at Cottonwood High School, and in so doing, reduce the loss and resulting replacement costs of those books.

High schools throughout the Intermountain West, which had a system, were sent fact-finding surveys. Names and addresses of those schools were obtained from companies manufacturing systems. Replies were then summarized and interpreted.

After the data were analyzed, a comparison was made of Cottonwood High School and the schools surveyed. A projection of future losses with and without the system was made to determine the advisability of installing an electronic security system.

The results revealed that school media centers could have considerable reduction in book loss and cost with installation. Savings in cost for a five-year period amounted to \$386,745. Average decrease in book loss from the media centers surveyed was 80 percent. Applying this percentage of decrease to the previous average loss for the past five years at Cottonwood High School and to the average cost of the system, an electronic security system could prevent enough books from being stolen to pay for the system in approximately two years.

Projection showed that without the system 3,715 more books would be stolen in a five-year period at a cost of \$64,047. With

installation the loss could be decreased to 745 books for a five-year period and 2,970 books would not be lost. Results from the study then determined a book detection system would reduce book theft sufficiently to justify installation and operational costs.

PREFACE

Like so many modern libraries, the high school media library has a continual book theft problem. Frustrated librarians, feeling a keen sense of responsibility, have tried various methods to keep a tighter rein on book collections. Today, the availability of electronic security systems provides one method to assist in diminishing the problem. This study was undertaken to determine if an electronic book detection device reduces book theft sufficiently to justify the installation and operational costs of the system.

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This project is lovingly dedicated to the memory of the author's mother and father who watch from God's chambers as their daughter receives her degree.

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Chapter 1

THE PROBLEM

Introduction to the Problem

Book loss continues to plague school libraries. Over the past five years theft rates have increased dramatically.¹ The number of unaccounted book losses at Cottonwood High School² Library Materials Center has increased annually. Since its opening in 1970, approximately 3,700 volumes, representing \$26,300 have disappeared from the collection.³ Various methods such as reducing exit possibilities, checking at the main desk to make certain that hardbound books had been properly circulated, unlimited renewal, open shelves, and public relations campaigns have been tried to curb the problem. Attempts have been made to have regular inspection routines at the exits, thereby tightening security. Often more than 100 students leave simultaneously. With only two professionals checking books at the exit,

¹Eugene Burdenuk, "Secondary School Cuts Pilfering," Canadian Library Journal, 31 (September-October, 1974), 386. (at the time Eugene Burdenuk was Librarian, Timmins High and Vocational School, Ontario, Canada).

²Cottonwood High School (hereafter CHS) is located in the Granite School District, Salt Lake City, Utah. Currently it has the largest student body in the state. Population for the 1976-77 school year was 2,683 students, 104 faculty, three administration, seven counselors, three professional media staff, and one computer technician.

³Information was taken from the annual shelf list inventory and acquisitions reports. All book inventories for hardbound volumes includes 100 percent of the collection.

locating stolen books is rather inconsistent. The use of guards for monitoring the exits was considered too costly; often students have been unreliable.

Several companies are currently manufacturing book detection equipment. All of these systems operate on the same basic principles. Installation of the detection mechanism is at or near the exit of the library. A device—usually electronic, magnetic, or chemically sensitive—is hidden in the books and must be screened, desensitized, or removed as part of the check-out procedure. If a would-be-thief attempts to steal a book that has not been desensitized, the electronic detection sensor at the exit will be activated. Lights or a buzzer signal the librarian. Gates across the exit lock in order to prevent anyone from passing through. For the library patron with a properly circulated book the system eliminates delays at the exit.

There are many such systems located in high schools throughout the United States, especially on the west and east coasts.⁴ The availability of electronic security systems⁵ provides one possible solution to stem the increasing losses experienced at CHS Library Materials Center. The financial drain is of concern as the cost of replacing these book losses increases with inflation. The book budget for Granite School District remained \$1.50 per student for eight consecutive years though it was increased to \$1.63 for 1976-77.⁶

⁴Statement by Mr. Norman Trout, Sales Representative, 3-M Company, personal interview, Salt Lake City, Utah, October 21, 1976.

⁵Hereafter called ESS.

⁶Statement by Dr. Donald C. Hess, Media Supervisor, Granite School District, personal interview, Salt Lake City, Utah, August 7, 1976.

Because of rising book costs and budgets which have not increased, there is little hope of enlarging the collection if losses continue at the present rate. Equally important is the service loss which means inconvenience and frustration for patrons having immediate need to use missing resources. Thus, it is imperative that programs be funded which contribute most to the library center's effectiveness.

The Problem

With growing losses, high use of the Center, static budgets, or budgets which fail to keep pace with inflation, it is necessary that the problem of book theft be dealt with by the media staff and school administration. The purpose of this study was to determine whether an ESS is economically feasible to justify its installation at Cottonwood High School.

Subproblems related to this study were (1) to devise an instrument to survey high school media centers, (2) to survey schools which have already installed an ESS, and (3) to analyze the results of the survey and compare those results to the loss and resulting cost of book theft at Cottonwood High School for the previous five years with and without an ESS.

Need for the Study

As noted on page one, Cottonwood High School suffered a \$20,300 loss in volumes since its opening. The disappearance of these books from the Materials Center has caused service to become less effective, often leaving students without needed information. The loss has also been damaging to public relations. Furthermore, not only is the cost of adequately monitoring the exits beyond the allocated budget, but the cost in lost time for patrons submitting to searches becomes a

large factor to consider. Thus, the results of this study should help determine whether an ESS in CHS Materials Center could reduce loss to such an extent that the system would be cost effective.

Delimitations of the Problem

No attempt was made to explore security systems designed to protect the library after closing hours or systems that watch over libraries in hard to supervise areas. Only those detection systems designed to detect book theft at exits were considered.

Inexpensive paperback books were excluded. School librarians have found paper, binding, and margins are so inadequate and the expected book life so short that expensive processing is not justified for paperbacks. They are usually not included in the shelf list; consequently, accurate records of loss and resulting costs would, most likely, not be available.

No consideration of nonprint materials was made. Only loss of hardbound books due to theft was studied. Systems--bypass or full circulating--were excluded.⁷ Any discussion of the type of equipment currently available on the market was also excluded.

Information prior to 1965 was excluded, as ESS were so new that

⁷Both the bypass and full circulating systems are ESS.

With the bypass ESS books are permanently activated. After the books have been charged-out, the volume(s) are passed around the sensing equipment by the librarian, where they are picked up by the borrower.

With the full circulating ESS books remain sensitized until they are deactivated during check-out. This allows the books to be carried through the exit area without signaling the sensors to lock the gate. When the books are returned, they are sensitized so that the book(s) cannot be removed from the library without being properly deactivated.

studies concerning their effectiveness in reducing book loss had not been completed. Maxine Reneker found there were no academic libraries reporting use of the newly developed magnetic anti-theft systems in late 1965 or early 1966.⁸

⁸Maxine H. Reneker, A Study of Book Thefts in Academic Libraries, U. S., Educational Resources Information Center, ERIC Document ED 053 748, September, 1970, 53. (at the time Maxine Reneker was a graduate student, Library School, University of Chicago).

Chapter 2

THE LITERATURE SEARCH

In recent years librarians have become more concerned with the disappearance of books from library collections. Increasingly they are convinced that this disappearance of volumes both seriously reduces the quality of library service and also imposes a substantial financial drain on limited book budgets.¹ During the 1950's and early 1960's librarians began to recognize the missing book problem and to assess the impact of the dollar loss on libraries. Although the problem was readily identified, practical and economical solutions were not offered.² Now, more than a dozen years later, librarians are still wrestling with the problem of book theft. A survey conducted by the Burns Security Institute reported that, of 255 libraries, 205 pinpointed book theft as the major security problem facing libraries.³ Inventories, carried out annually in school libraries, indicated book loss rates ranging anywhere from 3 to 12 percent.⁴ In 1971, Timmins High and Vocational School, Ontario, Canada, reported 1,400 volumes missing from a collection of

¹Robert N. Sheridan, "Measuring Book Disappearance," Library Journal, 99 (September 1, 1974), 2040. (at that time Robert Sheridan was Director, Levittown Public Library, New York).

²Ibid.

³Burns Security Institute, National Survey on Library Security, U. S., Educational Resources Information Center, ERIC Document ED 080 131, September, 1973, 9.

⁴Burdenuk, op. cit., p. 386.

twenty thousand. Using a six dollar per volume figure, the losses exceeded \$8,000.⁵ West Leyden High School, Northlake, Illinois, experienced a loss of 1,588 books in an annual inventory, representing a cost of \$12,740.⁶ Both schools made the decision to install an ESS. Many libraries studied by the Burns Institute research conceded they can only guess at the extent of losses.⁷

Librarians feel a responsibility for their collections and are upset at the book loss. Robert Sheridan commented that some librarians have stated the disappearance of books is a "self-weeding"⁸ process for collections.⁹ Ron Martin found in his study, concerning causes of mutilation and theft, that 84 percent of the librarians had agreed poor student attitude was the major cause of most library losses.¹⁰ Heavy demand on a limited number of resources was also a primary cause of

⁵Ibid., pp. 386-87.

⁶Robin B. Rains, "High School Library Cuts Book Losses 92 Percent in Technology vs the Academic Book Thief," American School and University, 45 (October, 1972), 26. (at that time Robin Rains was Department Chairman, Center for Instructional Materials, West Leyden High School, Northlake, Illinois).

⁷Burns Security Institute, op. cit., p. 3.

⁸According to Sheridan "self-weeding" refers to those resources that are stolen from the library. They are usually those which are important to the students; hence, valuable to the collection. Those resources left on the shelves are easily "weeded out" and can be thrown away.

⁹Sheridan, op. cit., p. 2042.

¹⁰Ron G. Martin, Current Trends of Periodical Circulation Policies Relative to Attitudes by Librarians Toward Causes of Mutilation and Theft in 92 4-Year Colleges and Universities, U. S., Educational Resources Information Center, ERIC Document ED 089 724, August, 1972, 12. (at that time Ron Martin was a graduate student in the Graduate School of Library Science, University of Missouri, Columbia, Missouri).

mutilation and theft.¹¹ Media coordinators found difficulties in attempting to change attitudes or motivate teachers to refrain from putting pressures on students to obtain high grades or give assignments without knowing if any resources are available.

Knowing that school media centers lose books in sufficient numbers to warrant action, it is wise to consider effective means to prevent thefts. Matt Roberts commented:

It suffices to say at this time that exit controls, regardless of their type, are successful only to the extent that they keep honest men honest. No exit control can frustrate the designs of a determined thief, unless he is totally inept.¹²

One hundred seventy-two of the 255 libraries studied by the Burns Security Institute specified some type of safeguard was needed to prevent theft. Of those 172, eighty-six desired electronic detection.¹³ In the Martin study four college libraries reported they were pleased with the ESS; however, librarians reported that the quality of desk personnel has a great deal to do with its total effectiveness.¹⁴ It is important that personnel monitoring the exit have good rapport with the library patrons.

Several libraries turned to the book detection system in hopes that it would cut down on book theft. In some of the institutions

¹¹Ibid.

¹²Matt Roberts, "Guards, Turnstiles, Electronic Devices, and the Illusion of Security," College and Research Libraries, 29 (July, 1968), 263. (at that time Matt Roberts was in charge of the Circulation Department, John M. Olin Library, Washington University, St. Louis, Missouri).

¹³Burns Security Institute, op. cit., p. 11.

¹⁴Martin, op. cit., p. 16.

installation was based on judgment rather than substantial data.¹⁵ Such was the case at the Harold B. Lee Library, Brigham Young University, Provo, Utah. The rationale was, since other libraries with an ESS were experiencing success in the reduction of book theft, so might the Harold B. Lee Library.¹⁶ In her study of book thefts in academic libraries, Reneker found that by 1970, ESS had been installed in at least eighty-five academic libraries.¹⁷ After consideration of several methods to secure exits, "the Minneapolis Public Library concluded that both in terms of actual dollars saved and of increased ability to provide materials on request, the decision to purchase book detection equipment was warranted."¹⁸

However, views differ among librarians as to the effectiveness of ESS to control theft. Roberts stated:

It is unfortunate that electronic detection is not the answer to the theft problem. It is a good idea in theory; however, its cost makes it impractical while its inherent weaknesses make it unworkable.¹⁹

In addition Roberts commented that even if the system does away with a guard, inherent in the operation of the ESS is the continuous presence of someone in authority at the exit to apprehend the suspected

¹⁵Sheridan, op. cit., p. 2040.

¹⁶Statement by Douglas Bush, Assistant Director of Libraries for Public Services of the Harold B. Lee Library, personal interview, Provo, Utah, June 30, 1976.

¹⁷Reneker, op. cit., p. 16.

¹⁸Marian H. Huttner, "Measuring and Reducing Book Losses," Library Journal, 98 (February 15, 1973), 513. (at that time Marian Huttner was Assistant Head, Subject Department, Minneapolis Public Library).

¹⁹Roberts, op. cit., p. 274.

would-be-thief. In his opinion the system is predicated upon the belief that ESS are infallible. "Therein," he said, "lies the fallacies of electronic detection."²⁰

Several Brigham Young University students studied the effectiveness of the book detection system to reduce book theft from the Harold B. Lee Library. They found that a way was needed to eliminate theft in hard-to-search places--cases, purses, under blouses, shirts, and coats--while allowing for a quick, easy exit from the library. At the same time good patron satisfaction and favorable public relations should be maintained.²¹ Also studied were the attitudes of the patrons towards the ESS and methods used by students to steal books. Suggested procedures were then provided to improve the book circulation security.²² The study indicated those who have a desire to steal books thought the system was weak while those who did not wish to take books illegally thought the system was good.²³ The ESS is only as effective as those who are monitoring the exit. Stealing books was simple if the proctor at the exit was docile and apathetic. The students found, on the whole, the security system was effective. Having the ESS was better than searching each patron exiting from the library. Most of the weaknesses which make the system fallible can be overcome providing a rather aggressive, carefully trained monitor was at or near the exit during the time the library was open to patrons. The writers also

²⁰Ibid., p. 273.

²¹R. J. Black, ed. and Others, "Security at the Harold B. Lee Library" (paper submitted to the Organizational Behavior Department, Brigham Young University, Provo, Utah, April, 1976), 2.

²²Ibid., p. 3. ²³Ibid., p. 11.

recommended the proctor's desk be placed where his view of the exit would not be obstructed. Further, the students suggested (1) a fisheye mirror be placed so the proctor could observe any wrong way exiting or book exchange over the exits, (2) the company, manufacturing the ESS, produce a paint to magnetize the books. This would eliminate the use of detection strips which can be cutout of the book, and (3) the system be tested at regular intervals to make sure it is working properly.²⁴

In spite of a few mechanical errors the staff at Mesa Community College, San Diego, California, believe the device was a good investment for the library.²⁵ During the school year 1974-75, three high schools in the Shawnee Mission School District, Shawnee Mission, Kansas, participated in a pilot project to study different types of exit security systems--the full circulating ESS, the bypass ESS, and a guard-at-the-door. After careful consideration of each system, the district's decision was made to install the full circulating ESS in the high schools.²⁶

Joseph Popecki, Acting Librarian at Catholic University, cited the use of electronics as having the "most potential in theft detection."²⁷ Librarians are encouraged with electronic systems;

²⁴Ibid., p. 13.

²⁵John L. Nunes, "The Electronic Librarian," College Management, 7 (March, 1972), 27.

²⁶Don D. Shirley, "Evaluation of Three Different Library Security Systems." (Shawnee Mission, Kansas: Shawnee Mission School District, October, 1975), p. 17. (Mimeographed.) (at the time Don Shirley was Director, Department of Library Services, Shawnee Mission Public Schools, Shawnee Mission, Kansas).

²⁷"Nine Thousand Volumes Stolen From Stacks of Five Washington D. C. University Libraries," Library Journal, 91 (October 1, 1966), 4609.

however, the devices do not belong in every library. Each librarian needs to weigh the cost of the system, attitudes of the patrons toward an ESS, and the arrangement of the physical facility against those losses from theft.²⁸

Generally, the literature pointed out, if school libraries are to maximize their services to patrons, enlarge collections, then book theft needs to be controlled. In terms of the immediate high reduction in book theft and dollars saved, the ESS was worth investigating for possible installation.

²⁸Rita A. Schefrin, "The Barriers to and Barriers of Library Security," Wilson Library Bulletin, 45 (May, 1971), 877. (at that time Rita Schefrin was a recent graduate, Graduate School of Library Science, Pratt Institute.

Chapter 3

METHODOLOGY

Companies which sell ESS (see Appendix D, p. 60) were contacted in order to obtain the names and addresses of those high schools in the Intermountain West¹ which had installed detection equipment. Names of the various companies were located in the Technology Report for 1974² and updated using the materials received from those companies replying. The companies contacted returned the names of a total of sixty-seven schools (see Appendix B, p. 54).

As the sample was small, the fact-finding survey was sent to all of the sixty-seven high schools. A follow-up letter was sent to those schools not responding (see Appendix A, p. 52). Fifty-four schools, or 81 percent, returned the survey. Each media coordinator was asked to answer basic questions concerning his media library and the ESS which had been installed. The media coordinator for each school was requested to indicate the amount of loss and resulting cost five years prior to the installation of the system and five years after the installation. Those schools which did not have records for the five-year periods were asked to list the loss and cost amount for the

¹States in the Intermountain West included Arizona, California, Colorado, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

²American Library Association. "Library Technology Report on Theft Detection Systems for Libraries: A Survey" (Chicago, Ill: American Library Association, May, 1974), p. 9. (Mimeographed.)

years they had within those five years. These time periods were selected because Cottonwood High School opened in 1970 and information on book loss and cost is only available since 1971. Also, it was felt that this was an ample period of time to show a pattern of increase or decrease in loss and cost of books in those schools studied. The survey also asked the media coordinators to indicate if they thought having the system had assisted in keeping enough books from being stolen to justify the installation and maintenance costs.

In order to interpret the data, a summary was made of the answers on the survey. Using this summary, tables and figures were constructed to facilitate the presentation of the data. After the data were presented and analyzed, a comparison was made of CHS and the schools surveyed. Then a projection of future losses at CHS with and without an ESS was made. These projections were then compared to the figures obtained in the survey to determine the advisability of installing an ESS at CHS.

Chapter 4

ANALYSIS OF THE SURVEY

Media Center Survey

The respondents were requested to provide data concerning the school population, size of the media center staff, arrangement of facilities, and the hardbound book inventory.

Respondents were asked to indicate the range of the various populations within the school (the number of media staff is excluded from the population data in Table 1 and will be listed in Table 2). Student population ranged from a low of 850 to a high of 4,200. One to 6 principals were indicated. The statistical range of faculty members was 60 to 140. (see Table 1).

Table 1

School Population

Type of population	Range
Students	850-4,200
Principals.	1-6
Faculty.	60-140

The respondents were asked to provide the number of professional and paraprofessional staff members in the media center. Professional media staff ranged from a low of one to a high of three. The adult

paraprofessionals ranged from one to ten¹ (see Table 2). One school reported four paid student aides. All schools had at least one professional and one paraprofessional staff member. Generally, schools with the largest populations had the largest media staff; however, there were exceptions. A school reporting 4,200 population had eight staff members while a school with 2,100 population had nine staff members.

Table 2
Population of the Media Center Staff

Type of population	Range
Professionals	1-3
Paraprofessionals	1-10

The number of exits in the media centers ranged from a low of one to a high of seven. All schools with more than one exit reported either locking extra doors and/or installing panic bar alarms, leaving just one exit for checking out.

The size of the hardbound book collections ranged from a low of 7,000 to a high of 38,000 volumes. Schools with the larger populations and larger collections tended to have the highest theft rate

¹For the purposes of this study a professional is considered as an adult who has met the educational qualifications of the individual school district to be hired as a professional. Professionals have educationally oriented tasks such as teaching students, cataloging, reference work, or working with teachers. They may be called media coordinators, media specialists, or librarians.

Paraprofessionals are those adults who perform clerical and technical tasks such as typing, filing, book processing, or media production. Clerks and technicians were considered as constituting paraprofessional staff in the survey.

prior to the installation of the ESS.

Most schools reported that they completed a hardbound book inventory annually. Ninety-two percent of the schools completed an annual book inventory, and 4 percent completed an inventory twice a year (see Table 3). Therefore, schools completing a total inventory each year made up 96 percent of those reporting.

Table 3
Frequency of Hardbound Book Inventory

Frequency	Number of schools	Percentage of total
Annually	50	92%
Biannually. . . .	2	4%
Every third year. .	1	2%
Not reporting. . .	1	2%
Totals . .	54	100%

Most schools reported they completed an annual inventory of 100 percent of their collections. Those media centers which inventoried the entire collection of hardbound volumes totalled forty-nine, or 90 percent. There were two schools, or 4 percent, completing one-third of the collection annually, and one school inventoried only one-fourth of the collection each year. One school reported they completed an inventory when time permitted and help was provided. One school did not report. Table 4 indicates the percentage of hardbound books which were inventoried each year.

Table 4
Percentage of Hardbound Books Inventoried

Frequency	Number of schools	Percentage of total
Total collection (100%)	49	90%
One-third of collection	2	4%
One-fourth of collection	1	2%
Irregular	1	2%
Not reporting	1	2%
Totals	54	100%

Survey of the Electronic Security Systems

Two of the six companies notified returned the names and addresses of high schools in the Intermountain West having an ESS; however, all of the schools which replied to the survey indicated they had installed a 3-M Tattle-Tape system.

There were four media centers with an ESS as early as the 1972-73 school year. Of those schools reporting thirteen, or 24 percent of the schools, had their ESS longer than two years. Fifty-nine percent had installed their systems in 1974-75 and 1975-76, indicating most of those schools returning the survey had only recently installed ESS. Installations for two schools were completed in 1976-77. This comprised 4 percent of the schools responding. Those schools not reporting totalled seven schools, or 13 percent. (see Figure 1).

Initial installation costs of the systems ranged from a low of \$7,000 to a high of \$13,000. Installation costs for sixteen schools ranged from \$7,000 to \$9,000 while twenty-six schools had installation

prices from \$10,000 to \$13,000. One system was leased and, therefore, the price was not known. Another school commented the system had been purchased on a district basis, thus making the cost unavailable. This wide range of installation costs was due to (1) the amount of hardware purchased, i.e., the sensing units, book check units, entrance and exit gates, (2) the quantity of book detection strips needed to protect the volumes, (3) the type of detection unit, i.e., bypass or full circulating, (4) the number of rope or guide rails purchased, and (5) price changes of the equipment. Library facilities with several exits and entrances required more gates and corridors.

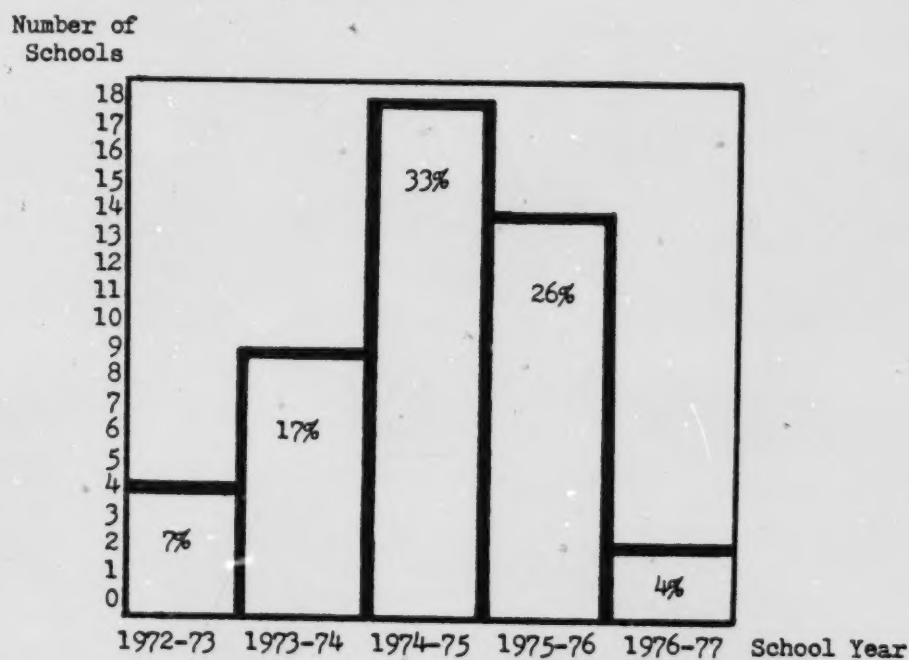


Figure 1

Year of ESS Installation

Maintenance costs included repair service for any breakdown of the system or replacement of its parts and the yearly purchase price

for detection strips. Any wages for monitors at the exits were not included in maintenance costs. (see page 23). Data obtained on annual maintenance costs of the ESS revealed a low of zero dollars and a high of \$2,500. All but one school reporting fell within the zero to \$837 range. One school had the \$2,500 annual maintenance cost. Since the \$2,500 was much higher than the costs of the remaining schools, a more realistic average was also calculated using the zero to \$837 range. Average cost including the \$2,500 was \$434, without \$344.

Six schools carried a maintenance contract with the company, costing about \$300 per year; however, this cost did not include the cost of detection strips. The detection strips were purchased by the school district, and the media coordinators did not know the cost. Seven schools were still under company warranty which provides free maintenance, but does not include the purchase of the detection strips. Twelve schools, or 22 percent, did not know the maintenance costs.

Most of the schools responding indicated they had not noticed an increase in mutilation since the installation of the ESS. Thirty-six schools, or 67 percent, reported no increase in mutilation, and eleven schools, or 20 percent, reported they had noticed some increase. Two schools commented that increase in mutilation was noticed when the system was first installed, but since the novelty of the ESS had worn off, there had not been any increase. There were four schools, or 7 percent, that did not report any data. Table 5 indicates, with the installation of an ESS, the media center staff would have little concern about mutilation of books.

Media coordinators reported a decrease in cost of replacing books since the installation of the system. Twenty-nine schools, or 54 percent, reported a decrease, and ten schools, or 18 percent, reported

an increase. Eight schools, or 15 percent, had not had the system long enough to have any figures available. There were seven schools, or 13 percent, which did not report. (see Table 6). One school commented

Table 5
Book Mutilation

Response	Number of schools	Percentage of total
Yes	11	20%
No.	36	67%
Some	3	6%
Not reporting . . .	4	7%
Totals	54	100%

they were sending more books to the bindery since the installation of the system. One school reported a decrease in cost was due to the fact

Table 6
Cost of Replacing Books

Response	Number of schools	Percentage of total
Increase	10	18%
Decrease	29	54%
Not reporting. . .	7	13%
New installation. .	8	15%
Totals	54	100%

they were replacing fewer titles. They felt a greater need to acquire current titles rather than replace those previously in the collection.

Results from the survey indicated thirty-three schools, or 61 percent, found no selectivity² in book loss while eight schools, or 15 percent, noticed some selectivity among their losses. One librarian commented the staff had noticed fewer losses in all areas of the library. Four schools reported their ESS was too new to tell, and nine schools did not report. Table 7 indicates the percentage of selectivity in schools responding.

Table 7
Hardbound Book Selectivity

Response	Number of schools	Percentage of total
Yes	8	15%
No.	33	61%
Not reporting . . .	9	17%
New installation . .	4	7%
Totals	54	100%

Monitors stationed at the exit where the ESS was located were so varied it made a meaningful analysis difficult; however, fifty-one librarians, or 94 percent, reported having someone placed at the exits. Further, these schools reported using a combination of

²Selectivity refers to taking books from one section of the library such as fiction, biography, literature, history, et al.

personnel, i.e., librarians, student assistants, aides, or clerks, indicating they preferred an authority figure at the exit. There were nineteen libraries, or 35 percent, that used a combination of personnel. Student assistants were monitors in fifteen schools, or 28 percent. The librarian was the monitor in one school, and nine schools used adult aides. Seven school libraries had no guard at all, and one comment was made that whoever was available served as the monitor. Three schools did not report.

There were thirty-three schools, or 61 percent, indicating no wages were paid for the monitor at the exit. Wages were paid to monitors in eight schools. These wages ranged from a low of \$3,600 to a high of \$8,880. Average wage was \$5,977. Thirteen schools did not report.

Media coordinators were asked to indicate whether or not they felt having an ESS kept enough books from being stolen to justify the installation and maintenance costs. There were forty-five librarians, or 83 percent, indicating a positive response, and two schools, or 4 percent, replied negatively. Four schools felt the installation was too new to tell, and four schools did not respond.

Media coordinators were also asked to indicate the total number of hardbound books lost and the cost of this loss due to theft for each of the five years prior to the installation of their ESS and the five years after installation. If records for a five-year period, before and after installation, were not available, school media coordinators were requested to provide data for as many years within the time period as they had on record. Most of the librarians provided statistics for a five-year period prior to installation of the ESS; however, as previously indicated, the majority of schools had installed

their ESS within the previous three years, and figures were only available for that period of time. (see page 18). Because a high percentage of the schools reporting completed a total inventory annually, (see Tables 3 and 4) numerical amounts given on the loss and cost are accurate.

Data from the loss and cost figures indicated a sizeable decrease in book loss and the resulting cost. (see Tables 8 and 9). Installation of the ESS resulted in a considerable savings of \$386,645, or a decrease of 90 percent. Figures showed 83,988 books, or 88 percent, were prevented from being stolen due to the ESS. Thirty-three school libraries, or 61 percent, provided figures indicating the book loss and the cost due to the book loss for a five-year period before and

Table 8
Book Loss Due to Theft

Statistics	Before installation	After installation	% Decrease
Range	2,339-8,002	33-1,610	
Average	19,059	404	
Total	95,294	11,316	88%

Table 9
Cost Due to Loss

Statistics	Before installation	After installation	% Decrease
Range	\$3,425-\$51,662	\$165-\$8,050	
Average	\$17,897	\$2,257	
Total	\$429,521	\$42,876	90%

after installation of an ESS. Data for nine schools were not available. Installation in eight libraries was too recent to have any figures for comparison. Four schools did not report.

The majority of those schools providing loss and cost figures showed a decrease in book loss in the 80 percent and 90 percent groupings. There were ten libraries, or 30 percent, in the 80 to 89 percent area, and fourteen libraries, or 43 percent, in the 90 to 99 percent area. This was a total of 73 percent of the libraries reporting loss and cost figures. There were five libraries, or 15 percent, in the 60 to 69 percent grouping, three schools, or 9 percent, in the 40 to 49 percent category, and one library, or 3 percent, in the 30 to 39 percent

Number of
schools

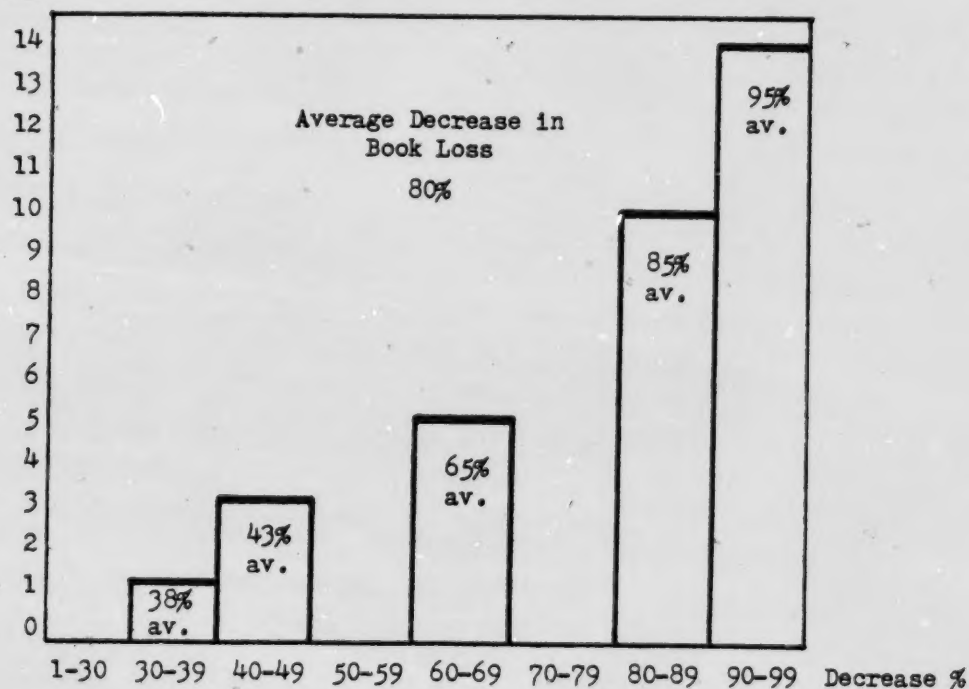


Figure 2

Percentage of Decrease in Book Loss

area. The average decrease in book loss was 80 percent. (see Figure 2).

Comparing the five-year loss and cost results of the schools studied with those of CHS, the figures showed a decrease for CHS. For a five-year period CHS had lost 3,717 books due to theft, or an average of 743 books per year. Those schools studied lost a total of 95,294 books, or an average of 920 books per year, prior to installation. On the average CHS had lost 177 fewer stolen books per year, or 20 percent less, than the school libraries responding to the study. (see Table 10, p. 27).

For the five-year period prior to installation, cost due to theft totalled \$429,521, or an average of \$6,468 per year, for those school libraries studied. The cost for book loss at CHS totalled \$26,313, or an average of \$5,263, for the five-year period. The difference in the average cost for the five-year period showed CHS having a decrease of \$1,205. (see Table 11, p. 28).

The projected loss and resulting cost for the forthcoming five-year period at CHS, with and without an ESS, were then determined.

Using the average increased cost per year, or \$1.73, for books purchased at CHS during the past five years, the average cost per book was determined for each of the forthcoming five years. Table 12 shows the cost per book for each of the previous five years at CHS and the increased cost per book for the same period of time. The increased cost was determined by subtracting the cost per book for one year from the preceding year. Table 13 presents the projected cost per book for the forthcoming five years. The projected cost was determined by adding \$1.73 (average increased cost) on to the book cost for the previous year. For example, Table 12 indicated the average cost per book for the fifth year was \$12.05. By adding \$1.73 to the \$12.05, the resulting total was

Table 10
Book Loss Prior to
Installation*

Year	1	2	3	4	5	Totals	Averages
Total loss of books in schools surveyed	38,414	24,847	14,018	12,507	5,508	95,294	20,160
Average loss of books in schools surveyed	1,205	1,047	779	883	687	4,601	920
Book loss at CHS	465	1,542	689	342	679	3,717	743

*Figures for a five-year period

Table 11

Cost Due to Book Loss Prior to
Installation*

Year	1	2	3	4	5	Totals	Averages
Total cost of books in schools surveyed	\$152,636	\$123,470	\$68,154	\$46,641	\$38,620	\$429,521	\$85,904
Average cost of books in schools surveyed	\$7,050	\$7,988	\$5,287	\$7,247	\$4,770	\$32,342	\$6,468
Cost due to loss at CHS	\$4,371	\$12,259	\$3,748	\$2,445	\$3,490	\$26,313	\$5,263

*Figures for a five-year period

\$13.78. The \$13.78 price was the increased projected cost for the first forthcoming year listed in Table 13. The projected cost for the second year, \$15.51, was obtained by adding \$1.73 to the \$13.78 figure, the projected cost for the first year, and so forth.

Table 12

Average Cost per Book at CHS for
the Previous Five Years

Year	1	2	3	4	5	Average
Cost per book	\$5.14	\$6.15	\$7.86	\$9.90	\$12.05	\$8.22
Increased cost	\$1.01	\$1.71	\$2.04	\$2.15		\$1.73

Table 13

Projected Average Cost per Book for
the Forthcoming Five Years

Year	1	2	3	4	5	Average
Increased cost per book	\$13.78	\$15.51	\$17.24	\$18.97	\$20.70	\$17.24

In order to determine the projected loss for the forthcoming five-year period without an ESS, the cost of books determined for each year was multiplied by the average number of books for CHS, or 743 books. Without the ESS, CHS would lose 3,715 books. The cost for the same period was determined by multiplying the determined cost for each book by the average book loss. In a five-year period the loss of books due to theft would amount to \$64,047, or an average of \$14,857 per year.

Table 14 shows the projected book loss and resulting cost without an ESS.

Table 14
Projection Without ESS

Year	1	2	3	4	5	Totals
Cost per book	\$13.78	\$15.51	\$17.24	\$18.97	\$20.70	
Book loss (per year)	743	743	743	743	743	3,715
Cost of lost books	\$10,239	\$11,524	\$12,809	\$14,095	\$15,380	\$64,047*

*Average cost for a five-year period was \$14,857.

To determine the loss and resulting cost with an ESS, 80 percent (the average decrease in books lost from the schools surveyed) of the average number of books lost per year at CHS resulted in 594 books. A yearly total of lost books would then be 149. Multiplying the cost per

Table 15
Projection With ESS

Year	1	2	3	4	5	Totals
Cost per book	\$13.78	\$15.51	\$17.24	\$18.97	\$20.70	
Book loss per year	149	149	149	149	149	745
Cost of books	\$2,053	\$2,311	\$2,569	\$2,827	\$3,084	\$12,844*

*Average cost for a five-year period was \$2,569.

book per year by the number of books lost determined that, with an ESS, CHS would lose 745 books over the forthcoming five-year period. Total cost for the same period would be \$12,844. (see Table 15).

Installing the ESS at CHS would prevent 2,970 books from being stolen and save \$51,203.

Chapter 5

CONSLUSIONS AND RECOMMENDATIONS

Summary of the Problem and Procedures

The purpose of this research was to determine if an electronic book detection system could reduce book theft sufficiently to justify the costs of the system. Procedures for this study were to summarize information received from a survey, to analyze the data, apply the analysis of the data to book loss and cost figures for CHS, draw conclusions from the data, and make the appropriate recommendations.

The instrument used to secure information for this study was a fact-finding survey. The survey consisted of basic questions pertaining to (1) the school population, (2) the media center staff, (3) the physical facilities of the library, (4) the hardbound book collection and, (5) the electronic security system installed to prevent book theft.

The survey was sent to sixty-seven high schools, all of the school media centers, within the Intermountain West, having an ESS. From the sixty-seven surveys sent out fifty-four, or 81 percent, were returned.

Summary of the Data Results

Based upon the analysis of the survey and the comparison of the survey results to Cottonwood High School, the following summary was made and conclusions drawn.

Although installations were relatively recent, most of the media coordinators reported being exceedingly satisfied with the ESS. The majority felt the system prevented enough books from being stolen to justify installation and maintenance costs. The largest percentage of media coordinators had not noticed an increase in book mutilation since putting in the system. They experienced fewer losses from all areas of the library.

Detection systems are costly, but considerably cheaper than costs due to theft. The major expense is the installation cost. The average price was \$10,217. The cost depended on the amount of hardware equipment installed, the number of detection strips purchased to protect the hardbound volumes in the existing collection, and price fluctuation. Maintenance averaged \$434. Costs in maintaining the system varied from library to library. The maintenance cost depended on any repair of the equipment and parts needing replacement and the number of strips purchased each year to protect new additions to the collection.

Inherent in the system is the use of an authority figure near the check-out exit of the library. Since this authority figure can be a student or paraprofessional, the ESS can relieve the professional library staff from constant checking at the exit. Most schools reported having librarians, student assistants, clerks, or adult aides serve as monitors. Seven schools reported there was no monitor stationed at the exit. Schools usually did not pay an extra wage for a person to watch the exit; however, eight schools paid a wage. This expense averaged \$5,977.

The data indicated there would be a decrease in book loss should a high school media center install an ESS. Figures for a

five-year period before and after installation of the system showed an average decrease of 80 percent. The ESS had prevented 83,988 books from illegally leaving the media center, resulting in a savings of \$386,645. Book loss for those schools surveyed was 4,601 with an average of 920 books per year. Cost for these books was \$32,342, or an average of \$6,468 per year. Cottonwood High School recorded 3,717 lost books, averaging 743 per year, with the resulting cost of \$26,313, or an average of \$5,263. Because a majority of school librarians completed an annual inventory of the entire collection, the figures on losses are accurate. Two of the schools, having the lowest percentage in book loss had approximately one-fourth of their hardbound book collection protected with the sensitized strips; hence, the high loss was because most of the collection was unprotected. In order to prevent a large percentage of books from leaving the media center without being properly checked out, the majority of the collection should have the strips inserted in the individual books.

Based upon past losses a projection showed that, in a five-year period, without the system 3,715 books would be stolen from Cottonwood High School at a cost of \$64,047. With installation of the ESS the losses could be decreased to 745 books for a five-year period, or \$12,844. In a five-year period the savings in dollars would be \$51,203 with 2,970 books not lost. Additional comments relating to student attitudes towards the system and the effectiveness of the system to reduce book loss can be found in Appendix A, p. 47.

Conclusions

Six companies manufacturing ESS replied to the writer's request, but only two of the companies supplied lists of high schools in the

Intermountain West that have ESS. Of that list only schools having a 3-M ESS responded. An exhaustive search indicated most of the literature expressed a positive attitude toward the ESS. At the time of writing a few articles considered a negative point of view. These were written in the late 1960's and early 1970's before the availability of the modern sophisticated equipment. Results of the fact-finding survey also expressed the same overwhelming positive bias for the ESS.

This study determined that an ESS is effective in averting book theft sufficiently to justify installation and operational costs at CHS. By installing the system the annual book loss and cost due to theft would be decreased, and the ESS would pay for itself in approximately two years. Unless the system should require repair service, any maintenance expense involved would be only the purchasing of the detection strips. This would amount to less than \$100 per year for Cottonwood High School.

There are other advantages of an ESS. Figures showed an immediate and permanent reduction in book loss. The system provides constant security and is more economical than paying a full-time guard. The system can detect materials which a would-be-thief is attempting to hide. Other materials such as magazines or paperback books could be protected. Students, too, could enjoy freedom in exiting without a book check.

Recommendations

From the information obtained as a result of this study, it is recommended that the administration and media center staff take steps to install a full circulating ESS in the Library Materials Center at Cottonwood High School. With the extensive use the Center experiences,

low budgets for book acquisitions, a minimum of staff to monitor the exit, and a high loss rate, the ESS would provide the best solution to the book theft problem.

It is also recommended that enough detection strips be purchased to sensitize the entire collection. Further, it is recommended that a paraprofessional be added to the staff to assist with monitoring the exit and controlling traffic flow.

The ESS should have one entrance gate and one exit corridor placed near the exit (see Appendix C, p. 58). This would provide sufficient space for traffic flow to and from the Center. The two additional exits in the Center should be locked and/or crash bar alarms should be installed to prevent any materials from being taken out other than by the main exit.

One of the limitations of this study, recognized by the author, was the number of schools whose post installation results were not representative of the five-year period. Because of these tentative results due to the recent installations of the ESS, it is recommended that a follow-up study be conducted in a few years to determine if the ESS continues to prevent enough books from being stolen to be economically feasible.

APPENDIX A
FACT-FINDING SURVEY

FACT-FINDING SURVEY

Please fill in each blank as completely and accurately as you can.
Where numbers are not available, estimate as best you can:

SCHOOL MEDIA CENTER

1. Please indicate the following statistics concerning your school population:
 - A. Total number of students currently enrolled. _____
 - B. Total number of principals. _____
 - C. Total number of faculty. _____
2. What is the number of professionals on the media staff? _____
Number of clerks and technicians? _____
3. How many exits in the media center? _____
4. Were there any changes made in the library's physical plant in order to install the electronic detection system? (Widened the entrance, closed some exits, added more exits, etc.) Please explain briefly.

5. What is the size of your hardbound book collection? _____
(number of volumes)
6. How often do you have a shelf list inventory of your hardbound book collection? _____ (annually, semi-annually, quarterly, etc.)
7. What percentage of your hardbound book collection do you inventory?

ELECTRONIC SECURITY SYSTEM

1. What electronic system did you have installed in your media center?
_____ (Tattle-Tape, Checkpoint, etc.)
2. What year was your system installed? _____
3. What was the installation cost of your system? _____
4. What are the annual operational costs to maintain the system?
_____ (This includes the repair of the system and magnetic devices to place in the books.)
5. Have you noticed increased mutilation since your system was installed? _____ (yes or no)

6. Have you experienced a decrease or increase in the cost of replacing books? _____
7. Have you experienced a selectivity in hardbound book loss since the installation of your system? _____ (yes or no)
8. (Circle the appropriate situation) Do you have a:
A. Hired guard B. Librarian C. Student assistant, or
D. Other _____ (please indicate)
stationed at the exit where the electronic system is located?
9. What is the annual amount of wage for the person stationed at the exit? _____
10. Do you feel having the electronic security system has assisted in keeping enough books from being stolen to justify the installation and maintenance costs? _____ (yes or no)

This space is open for you to make any comments concerning the effectiveness of your system to prevent book theft. I welcome your ideas and suggestions, and thank you for them.

If you wish a copy of the results of this survey, please write your name and address below:

Please indicate the total hardbound book loss and cost due to theft for each of the five years prior (or as many years as you have on record if less than five years) to the installation of your electronic security system:

BEFORE INSTALLATION

	Book Loss		Resulting Cost
(year) 1	_____	1	_____
2	_____	2	_____
3	_____	3	_____
4	_____	4	_____
5	_____	5	_____

Please indicate the total hardbound book loss and cost due to theft for the five years (or for as many years as the system has been installed if it is less than five years) after the installation of your electronic security system:

AFTER INSTALLATION

(year) 1	_____	1	_____
2	_____	2	_____
3	_____	3	_____
4	_____	4	_____
5	_____	5	_____

____ If the above information is not available or cannot be estimated, please check here and return the questionnaire.

Using the enclosed, stamped envelope, please return the survey by _____. Send it to DiAnna Davis, Cottonwood High School Library Materials Center, Salt Lake City, Utah 84121. (5715 So. 1300 East St.)

SUMMARY OF THE FACT-FINDING SURVEY

The School Media Center

1. Statistics concerning school population:
 - A. Students enrolled: range, 850-3,000
 - B. Number of principals: range, 1-6
 - C. Number of faculty: range, 60-140
2. Number of professionals on the media staff: range, 1-3
Number of clerks and technicians: range, 1-10; One school reported 4 paid student aides.
3. Number of exits: range, 1-7
4. Changes made in the library's physical plant when ESS was installed:
All schools with more than one exit reported either locking extra doors and/or installing alarms on extra doors, leaving one exit for emergency.
5. Size of hardbound book collection: range, 7,000-38,000
6. Frequency of inventory of hardbound book collection:
Annually - 50 schools
Bi-Annually - 2 schools
Every third year - 1 school
Not reporting - 1 school
7. Percentage of hardbound book collection inventoried:
100% - 49 schools
33 1/3% - 2 schools
25% - 1 school (annually)
As much as time permits on the years given help - 1 school
Not reporting - 1 school

Survey of the Electronic Security System

1. Name of the system installed: All schools - 3-M Tattle-Tape

NOTE: The author is aware of one school which had installed a Knogo system, but did not return the questionnaire.

2. Year the system was installed:

1973 - 4 schools
 1974 - 9 schools
 1975 - 18 schools
 1976 - 14 schools
 1977 - 2 schools
 Not reporting - 7 schools

3. Installation cost of the system:

\$7,000 - 1 school
 \$7,500 - 1 school
 \$7,800 - 2 schools
 \$8,000 - 1 school
 \$8,500 - 2 schools
 \$8,680 - 1 school
 \$8,700 - 1 school
 \$8,980 - 1 school
 \$9,000 - 6 schools
 \$10,000 - 8 schools
 \$10,334 - 1 school
 \$10,500 - 1 school
 \$11,000 - 3 schools
 \$11,826 - 1 school
 \$12,000 - 8 schools
 \$13,000 - 4 schools
 Cost unknown - 12 schools

4. Annual maintenance costs:

0 - 1 school
 \$85 - 1 school
 \$100 - 2 schools
 \$150 - 1 school
 \$200 - 2 schools
 \$240 - 1 school
 \$285 - 1 school
 \$300 - 4 schools
 \$330 - 1 school
 \$350 - 2 schools
 \$480 - 1 school
 \$500 - 2 schools
 \$600 - 2 schools
 \$800 - 1 school
 \$837 - 1 school
 \$2,500 - 1 school

Maintenance contract paid by district - 6 schools (\$300 per year).

Strips bought by school - 6 schools

Still under warranty - 7 schools

Cost unknown - 12 schools

5. Since installation of the ESS, was increased mutilation noticed?

Yes - 11 schools

No - 36 schools

Some - 1 school

Not reporting - 4 schools

Mutilation initially when ESS was installed, but no increase since novelty of the ESS has worn off - 2 schools

6. Increase or decrease in the cost of replacing books since installation of the system:

Decrease - 29 schools

Increase - 10 schools

Not reporting - 7 schools

Have not had system long enough to tell - 8 schools

NOTE: 3 schools suggest increase due to increase cost of books.

One school commented that they were now sending more books to the bindery.

One school commented that the decrease was simply due to the fact that they were having to replace fewer and fewer titles. They felt a greater need for current titles than replacements.

7. Selectivity in hardbound book loss since installation of ESS:

Yes - 8 schools

No - 32 schools

Not reporting - 9 schools

Fewer losses in all areas of library - 1 school

ESS too new to tell - 4 schools

8. Type of guard at the entrance-exit (along with ESS):

Librarian - 1 school

Student assistants - 15 schools

Adult aide - 2 schools

Clerk - 7 schools

Combination (librarian, student, aide, clerk, etc.) - 18 schools

No guard used - 7 schools

Whoever is available - 1 school

Not reporting - 3 schools

9. Annual wage for guard stationed at exit (yearly wage):

0 - 33 schools

\$3,600 - 1 school

\$4,032 - 1 school

\$4,500 - 1 school

\$5,000 - 1 school

\$6,000 - 1 school

\$7,800 - 1 school

\$8,000 - 1 school

\$8,880 - 1 school

Not reporting - 13 schools

10. Does the ESS prevent enough books from being stolen to justify installation and maintenance costs?

Yes - 45 schools

No - 2 schools

Too new to tell - 3 schools

Not reporting - 3 schools

NOTE: See the following pages for comments and suggestions from individual media coordinators concerning the effectiveness of their ESS to prevent book theft.

Book Loss Due to Theft

Statistics	Before installation	After installation
Range	2,339-8,002	33-1,610
Average	19,059	404
Total	95,294	11,316

Cost Loss Due to Theft

Statistics	Before installation	After installation
Range	\$3,425-\$51,662	\$165-\$8,050
Average	\$17,897	\$2,257
Total	\$429,521	\$42,876

Decrease Due to ESS

Book loss	Book cost
83,988 books	\$386,645

Percentage of Decrease in Book Loss After Installation

90 to 99% - 14 schools	Range: 92-99% Average: 95%
80 to 89% - 10 schools	Range: 80-89% Average: 85%
70 to 79% - none	
60 to 69% - 5 schools	Range: 61-69% Average: 65%
50 to 59% - none	
40 to 49% - 3 schools	Range: 40-46% Average: 43%
30 to 39% - 1 school	Range: 38% Average: 38%
Below 30% - none	

Total - 33 schools	Average decrease - 80%
--------------------	------------------------

ESS installed when school was new - 1 school

ESS installation too new to have figures to compare - 8 schools

Figures not available - 8 schools

Not reporting - 4 schools

NOTE: Two of those schools in the 30 percent and low 40 percent areas indicated that approximately one-fourth of their hardbound book collections had sensitized strips installed in the books.

COMMENTS FROM PARTICIPANTS

The following comments concern the effectiveness of an ESS to prevent book theft (see page 2 of the Fact-Finding Survey). Librarians were requested to share their ideas and suggestions so that personal reactions to the ESS could be studied. The statements are typed word for word as the librarians wrote them, with the exception that any reference to the name of an ESS or the manufacturer has been excluded.

We could never have continued to run an effective library without the system. Our losses in certain key areas were great. We were losing about 675 books a year. Last year we lost under 100.

I did want all books treated, and we do key magazines and some pamphlets.

Last year was the first total inventory. Loss was 300 books compared with 900 the previous year (partial inventory).

Our average loss of 300 books per year (1970-74) is exceptionally low for a high school this size. I attributed the low loss to using clerks at the exits to examine all materials as classes left the library. This was very time consuming, and it also antagonized regular library users. Had we not monitored the exits I'm reasonably certain our book loss would have more than doubled.

Contrary to the company suggestion, tapes inside the book pages leads to mutilation. We've had better success with the single sided ones placed down the back of the spine. I'm very pleased with the reduction of book loss, but I still feel that this is an interim step before books are made with an electronic coded thread glued into their backs. In the meantime, I'm glad to have this system.

Our students at Cibola High School have accepted and respected the system very well. Many have commented on how great it is to account for a book when not on the shelves. We are very pleased with the system, and I feel that it has worked for us.

Our inventory does not take place until May, at which time we will have a real assessment of the system's effectiveness, but from observing it thus far, we are very satisfied.

The system has paid for itself in two years.

In the first year our reduction was from losing 11.2 percent of our collection to a loss of 1.4 percent of the collection. We are delighted with the system. You didn't ask about attitude. Students, faculty, and community members all have had a very positive attitude about the "machine."

All four high schools in the Newport-Mesa USD are equipped with an electronic security system. Three of us installed ESS, all of who report results in annual book counts to be gratified with our findings. Newport Harbor High School, the first senior high school to install the system, has shown a marked decrease in book thefts. My library (Costa Mesa High School) also submitted a report last year that is encouraging, though the system operated a partial school year.

We were losing about 350 books per year (hardbound and paperbacks) and had lost about \$10,000 worth of books in the past five years. The security system exercises enough intimidation to prevent the large number of thefts we had before. It also frees the librarian and aides from constantly scrutinizing students as they exit the library.

The only problem of any magnitude was adjustment and ironing out the "bugs" which must occur with equipment this sensitive.

The ESS is great! Almost no maintenance or repair. Sales and repair personnel are very prompt. All the librarians I know have ESS.

The kids have responded to it very well. It allows the librarian to be a librarian and not a policeman!

Our system is too new to allow us to provide statistics on losses. There is an immediate psychological advantage to the system in that the staff is able to concentrate on assisting students rather than policing exits.

We have been pleasantly surprised at how the students have accepted the system. After an initial ten days or so of questions, it became a part of the routine.

Because of our physical layout, the system is adjacent to the circulation desk. Our circulation secretary was the natural person to oversee the system. It is our belief that an adult should be available to oversee the system.

The system has only been operational for two months. Therefore, it is difficult to access it especially with regards to a drop in book loss. We will do an inventory in May. If you would like to know the outcome, please let us know.

A result of having a protection that only the librarian would appreciate is knowing where the materials are. Since the installation of the ESS, I have not had to tell a student that I do not know where a specific item is. The protection system has eliminated this disappointing facet from our library.

The ESS has been no real problem except we forget to desensitize the books. We are all getting used to the "thing."

I have taken the inventory for the past seven years. The system was in for one-half the 73 to 75 period, and book losses were cut in half. I am indeed anxious to take the 1977 inventory.

The year before the system was installed we had 1,232 books stolen. After installation, the losses went down to 500 the first year. Now we are down to 320. We have a book collection of over 27,000 volumes. The materials are present, available for research.

I "strip" all hardbound books, paperbound books, and the magazines generally of the greatest use to students. There is a fantastic advantage for students who can generally locate the materials they want either in the library or in possession of students they can locate, if necessary. It has a fantastic advantage for the library staff psychologically in that one quits worrying about the books. The mental relaxation is unbelievable. You can find what you are looking for. The system assumes everyone is "innocent unless he proves himself guilty," or unless you make a mistake--and we approach it that way as usually our mistake and there is no hassle. We still do lose some books because some people are determined and no system can beat everything. The one big problem is notifying overdue students as you have many more, but, at least, you have a place to start.

We have had to call the service man at least once a month so far. I would advise having service insurance.

Last year we lost 900 books, or about 10 percent of our collection. I sincerely feel that the system will pay for itself in a period of three or four years. I would highly recommend the purchase of an ESS, although I cannot give actual figures until after our inventory.

Book theft is drastically down. Outside of the mutilation of the bindings, the system is really fine, and the students like it. I feel the mutilation is a phase. We watch the stock area. The principal has warned students against this type of vandalism and the discipline which will be made if a student is caught.

The pleasure of having and finding books on the shelves when one goes to find them is simply the greatest feeling I have had in all my thirty-five years of library work.

The system requires close policing and should be installed at a location where continuous surveillance is possible. Books can be passed over or around the detection system.

Until the novelty of the book detection system wears off, you will probably find increased mutilation of books by curious students.

We know that our losses are 1 percent or less as compared to over 15 percent before installation.

During the first year of operation after installation, the number of books lost was decreased by slightly more than 90 percent. We consider the system to be immensely successful in reducing book loss.

I cannot recommend enough an ESS. The savings I've had due to the book detection system has long ago paid for the system. We strip all hardbound and paperback books--and what a savings in paperbacks, as well as hardbound. Put in the complete system--two machines--one for sensitizing and one for desensitizing. The efficiency of this set up will pay in the end. Be persistent. Keep quoting loss figures to your district. Hopefully you'll win. The kids certainly will win, when books they need are there on the shelves and not stolen. Good luck! Any other questions, I'll be glad to respond.

In three years the system has paid for itself in reduced losses. If I include saving of staff time in inventory, recording, reprocessing, etc., the system has saved money.

Student reaction to the system has been positive absolutely. As the system becomes part of the furniture, less attention is paid to students exiting. We keep expecting our losses to rise because of sheer carelessness on our part, but so far that has not been the case.

Our book loss for the last year is probably less than the 191 because students help with the inventory and have been known to make mistakes. We double check the shelf lists they pull as missing against the books on the shelves. This does not account for those that are missing, but were not indicated as such.

We had many difficulties in the beginning because of the novelty of the system. I would not recommend advertising about it to the student body. I didn't say a thing, and it has caused fewer problems. Students seem to accept it as part of the building furniture.

We sensitized magazines and paperbacks, but the students found the strip and ripped them out. We no longer sensitize magazines and paperbacks except for those items that we know would disappear.

Do not sensitize cassett kits or anything on tape, and do not allow students to desensitize everything. We ruined most of a course of study because someone forgot.

A detection system does not belong with kids (my subjective opinion). It takes an average kid three minutes to find three ways to beat the system! (Pass through entrance side to friend, kick book across floor, hold over head)

The detection system does not foster good feelings within the students. Student reactions are anger or they use the system to call attention to themselves.

Even though it was December before we had treated the 4,000 minimum recommended. We still have only about 10,000 books treated, due to lack of personnel. It is our belief, however, that knowing the system is in operation is a powerful deterrent to potential book thieves.

Student assistant sits at the entrance and takes passes. No one else is there until the end of the period when a librarian, clerk, or teacher stands outside the gate as students pass thru (gate doesn't lock when a whole class leaves). If alarm sounds we search all notebooks of students in the area of the electric eye. Any student found with LRC material not checked out is sent to the Dean, and they document the incident and take any disciplinary action they deem appropriate.

Our system was installed just this last fall. We will not have any statistics until after our book inventory in June. However, when we look for a book on the shelf, we seem to be finding it there or legally checked out. This is a change over last year.

The system must be installed during the summer before school opens. All English classes scheduled at the beginning of fall semester will have casual introduction to the system along with any other new equipment or changes. Emphasize that money has been spent for this system in order that books will be available to you when you need them. Urge students to use the facilities to the fullest but do not play with equipment. At busy exit time the librarian at the door can facilitate movement of students.

If you need help getting the system, get assistance from student governing body and teacher committee--perhaps also parents.

Have clerks or volunteers trained before installing sensitizing material.



GRANITE SCHOOL DISTRICT

COTTONWOOD HIGH SCHOOL
5715 SOUTH 1300 EAST
SALT LAKE CITY, UTAH 84121

Principal
Dr. Reed P. Wahlquist

April 14, 1977

Dear Librarian:

Several weeks ago you should have received a fact-finding survey concerning the electronic security system in your high school library.

It is necessary that I have that information no later than May 1 in order to compile the data before the end of the school year.

Please send the completed survey if you have not already done so.

Thank you for your cooperation and assistance.

Sincerely,

Dianna Davis
Media Coordinator

APPENDIX B
HIGH SCHOOLS PARTICIPATING IN THE STUDY

HIGH SCHOOLS PARTICIPATING
IN THE STUDY

Agoura High School
28545 West Driver Avenue
Agoura, California 91303

Alhambra High School
101 South Second Street
Alhambra, California 91801

Aloha High School
S. W. 185th and Kinnaman Road
Beaverton, Oregon

Arcadia High School
234 Campus Drive
Arcadia, California 91006

Aviation High School
2025 Manhattan Beach Blvd.
Redondo Beach, California
90278

Bell Gardens High School
6119 Agra Street
Bell Gardens, California
90201

Benson Polytechnic High School
546 N. E. 12th Avenue
Portland, Oregon 97232

Bonanza High School
6665 Del Rey Avenue
Las Vegas, Nevada 89102

Carlsbad High School
3557 Monroe Street
Carlsbad, California 92008

Cibola High School
256 Willow Road, N. W.
Albuquerque, New Mexico 87107

Clairemont High School
4150 Ute Drive
San Diego, California 92117

Corona Del Mar High School
2101 East Bluff Drive
Newport Beach, California
92660

Coronado High School
2501 North 74th Street
Scottsdale, Arizona 85257

Costa Mesa High School
2650 Fairview Road
Costa Mesa, California

Dawson County High School
900 North Merrill Avenue
Glendive, Montana 59330

Del Norte High School
5323 Montgomery, N. E.
Albuquerque, New Mexico 87110

Eisenhower High School
1321 North Lilac Avenue
Rialto, California 92376

El Toro High School
25255 Toledo Way
El Toro, California 92630

Fountain Valley High School
17816 Bushard Street
Fountain Valley, California
92708

Greeley Central High School
1515 14th Avenue
Greeley, Colorado 80631

Greeley West High School
2501 35th Street
Greeley, Colorado 80631

Hoover High School
4474 El Cajon Blvd.
San Diego, California 92115

Junipero Serra High School
5156 Santo Road
San Diego, California 92123

Kearney High School
7651 Wellington Street
San Diego, California 92111

La Jolla High School
750 Nautilus Street
La Jolla, California 92037

Lakewood High School
4400 Briercrest Avenue
Lakewood, California 90713

Marcos de Niza High School
6000 South Lakeshore Drive
Tempe, Arizona 85282

Mark Keppel High School
501 East Hellman Avenue
Alhambra, California 91801

McClintock High School
1830 Del Rio
Tempe, Arizona 85282

Mercer Island Senior High School
9100 S. E. 42nd
Mercer Island, Washington 98040

Millikan High School
2800 Snowden Avenue
Long Beach, California 90815

Mira Costa High School
701 So. Peck Avenue
Manhattan Beach, California 90266

Mira Mesa High School
10510 Reagon Road
San Diego, California 92126

Mission Viejo High School
25025 Crisantha
Mission Viejo, California 92675

Monroe High School
9229 Haskel Avenue
Sepulveda, California 91343

Morse High School
6905 Skyline Drive
San Diego, California 92114

Mountlake Terrace High School
28101 - 44th Avenue, W.
Mountlake Terrace, Washington 98043

Newport Harbor High School
600 Irvine Street
Newport Beach, California 92600

Nordhoff High School
1401 Maricopy Highway
Ojai, California 93023

North Kitsap Senior High School
Route 4, Box 853
Poulsbo, Washington 98370

Oceanside High School
First & Horn Streets
Oceanside, California 92054

Oceanside High School East
400 Rancho Del Oro Drive
Oceanside, California 92054

Palmer High School
301 North Nevada
Colorado Springs, Colorado 80903

Patrick Henry High School
6702 Wandermere Drive
San Diego, California 92120

Point Loma High School
2335 Chatsworth
San Diego, California 92106

Polytechnic High School
1600 Atlantic Blvd.
Long Beach, California 90813

Pomona High School
475 Bangor Street
Pomona, California 91767

Redondo Union High School
631 Vincent Park
Redondo Beach, California 90277

Rowland High School
2000 South Otterbein
Rowland Heights, California
91748

Royal High School
1402 Royal Avenue
Simi Valley, California 93065

Saguro High School
6250 North 82nd Street
Scottsdale, Arizona 85253

San Diego High School
1405 Park Blvd.
San Diego, California 92101

San Gabriel High School
801 Ramona
San Gabriel, California 91778

San Geronimo High School
2299 East Pacific Avenue
San Bernardino, California 92404

San Marcos High School
4750 Hollister Avenue
Santa Barbara, California 93105

Santa Barbara High School
700 East Anapamu Street
Santa Barbara, California 93103

Santa Monica High School
601 Pico
Santa Monica, California 90405

Santa Rita High School
3951 South Pantano Road
Tucson, Arizona 85710

Schurr High School
820 Wilcox
Montebello, California 90640

Simi High School
5400 Cochran Street
Simi Valley, California 93063

Smokey Hill High School
16,100 East Smokey Hill Road
Denver, Colorado 80232

Sunnyside High School
1725 East Bibly Road
Tucson, Arizona 85706

Tigard High School
9000 S. W. Durham Road
Tigard, Oregon 97223

University High School
4771 Campus Drive
Irvine, California 92664

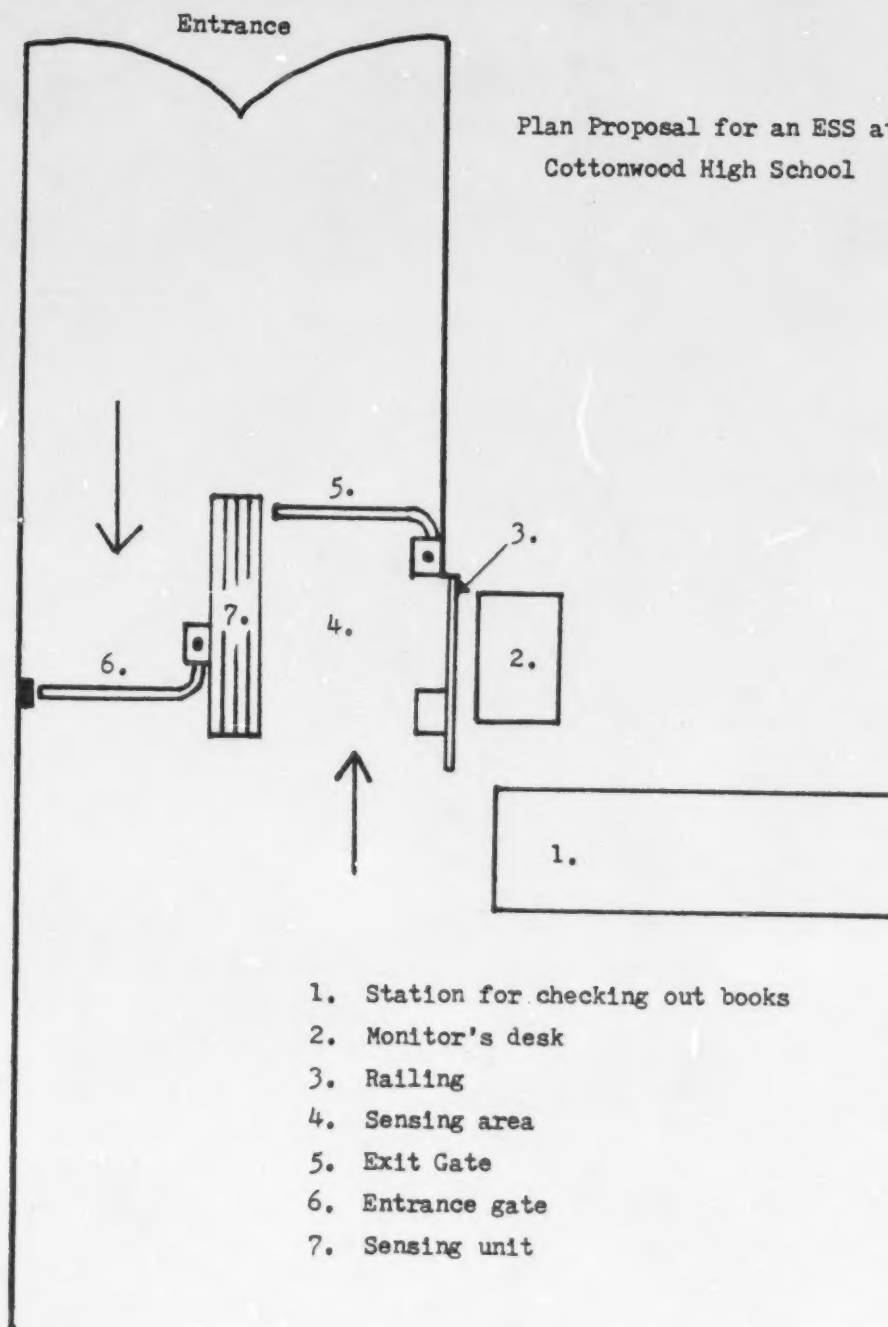
West Linn High School
5933 N. E. Holmes
West Linn, Oregon 97068

Wilson High School
4400 East 10th Street
Long Beach, California 90804

Woodway Senior High School
23200 - 100th West
Edmonds, Washington 98020

APPENDIX C

PLAN PROPOSAL FOR AN ESS AT
COTTONWOOD HIGH SCHOOL



APPENDIX D
MANUFACTURERS OF DETECTION SYSTEMS

MANUFACTURERS OF DETECTION SYSTEMS

RESPONDING TO REQUEST

Checkpoint Systems, Inc.
110 East Gloucester Pike
Barrington, New Jersey 08007

Gaylord Supplies and Equipment
P. O. Box 8489
Stockton, California

General Nucleonics, Inc.
Division of Sentronic International
P. O. Box 116
Brunswick, Ohio 44212

Knogo Corporation
100 Tec Street
Hicksville, New York 11801

Library Bureau
Book Detection Systems
Division of Remington Rand
801 Park Avenue
Herkimer, New York 13350

3-M Detection Systems
3-M Center, Building 551-NE
St. Paul, Minnesota 55101

APPENDIX E
LETTERS



GRANITE SCHOOL DISTRICT

COTTONWOOD HIGH SCHOOL
5715 SOUTH 1300 EAST
SALT LAKE CITY, UTAH 84121

Principal
Dr. Reed P. Wahlquist

September 20, 1976

Public Relations Director
Book Security Systems
Name of Corporation
Address of Corporation
City

Dear Sir:

Due to book loss the administration and professional library staff at Cottonwood High School are considering the installation of an electronic book detection system in the library.

Other means have been appraised, but our information thus far indicates that electronic devices can reduce book theft effectively enough to be economically feasible for high schools to install. You are probably aware that, presently, there are no high schools within Utah using such equipment. Since the (Brand Name) Security System is being considered, we desire to contact those high school libraries in the United States that have installed the system currently available from the (Name of Corporation). As part of our study we wish to determine how effective their equipment has been in reducing theft, comparing rate reduction in the library before and after installation. Please send, as soon as possible, the names and addresses of those high schools now using the (Name of System).

Also, enclose any current literature you have on your system which would assist us in learning of the technical functions, sensitive devices, purchase and maintenance costs, etc.

I do appreciate your kind assistance in this matter.

Sincerely,

DIanna Davis, Media Coordinator

Dr. Reed P. Wahlquist, Principal



GRANITE SCHOOL DISTRICT

COTTONWOOD HIGH SCHOOL
5715 SOUTH 1300 EAST
SALT LAKE CITY, UTAH 84121

Principal
Dr. Reed P. Wahlquist

October 25, 1976

Mr. Don Shirley
District Media Supervisor
Shawnee Mission School District
7235 Antioch Street
Shawnee Mission, Kansas 66204

Dear Mr. Shirley:

Mr. Norman Trout, JM Sales Representative, tells me of a report on book security and detections systems concerning the Shawnee Mission School District.

I am in the process of completing a masters thesis project on the economic feasibility of such systems in public schools. I feel your report would be of help in supplying needed information.

Would you please send a copy of the report as soon as possible. I shall be happy to reimburse you for any cost involved.

Thank you for your fine cooperation. Any help is sincerely appreciated.

Sincerely,

Media Coordinator

NOTE: A duplicate letter concerning a report on book detection systems at Palmer High School was also requested from:

Mr. Lee Hall, Librarian
Palmer High School
301 North Nevada
Colorado Springs, Colorado 80903

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SOURCES CONSULTED

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